UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/714,095	11/13/2003	**Chatree Sitalasai**	025779-003300US	9510

20350 7590 02/18/2010

TOWNSEND AND TOWNSEND AND CREW, LLP
TWO EMBARCADERO CENTER
EIGHTH FLOOR
SAN FRANCISCO, CA 94111-3834

EXAMINER	
PIZIALI, JEFFREY J	

ART UNIT	PAPER NUMBER
2629	

MAIL DATE	DELIVERY MODE
02/18/2010	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/714,095	SITALASAI ET AL.	
	Examiner	Art Unit	
	JEFF PIZIALI	2629	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *23 November 2009 and 05 August 2009*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1,3,5,6,11-33 and 36-38* is/are pending in the application.

4a) Of the above claim(s) *22-24,29,36 and 37* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,3,5,6,11-21,25-28,30-33 and 38* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 112

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. *Claims 1, 3, 5, 6, 11-21, 25-28, 30-33, and 38* are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

3. Claim 1 recites the limitation "***said optical mouse***" (*line 14*). There is insufficient antecedent basis for this limitation in the claim.

It would be unclear to one having ordinary skill in the art whether this limitation is intended to be identical to, or distinct from, the earlier claimed "***an optical mouse system***" (*line 2*).

The Applicant is respectfully requested to clarify whether or not "***an optical mouse***" is a required element of the claimed invention.

4. The term "***about 5-8 microamps***" in claim 38 (*line 2*) is a relative term which renders the claim indefinite.

The term "***about 5-8 microamps***" is not defined by the claim, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention.

It would be unclear to one having ordinary skill in the art what degree of precision is intended by the term "***about 5-8 microamps***".

The Applicant is respectfully requested to clarify precisely how close to the range "***5-8 microamps***" an electric current consumption is required to be before qualifying as "***about 5-8 microamps***".

5. The remaining claims are rejected under 35 U.S.C. 112, second paragraph, as being dependent upon rejected base claims.

6. The claims are rejected under 35 U.S.C. 112, second paragraph, as being indefinite.

As a courtesy to the Applicant, the examiner has attempted to also make rejections over prior art -- based on the examiner's best guess interpretations of the invention that the Applicant is intending to claim.

However, the indefinite nature of the claimed subject matter naturally hinders the Office's ability to search and examine the application.

Any instantly distinguishing features and subject matter that the Applicant considers to be absent from the cited prior art is more than likely a result of the indefinite nature of the claims.

The Applicant is respectfully requested to correct the indefinite nature of the claims, which should going forward result in a more precise search and examination.

7. *Claims 1, 3, 5, 6, 11-21, 25, 28, 31, and 32* are rejected under 35 U.S.C. 103(a) as being unpatentable over in view of ***Wenstrand et al (US 2004/0155860 A1)*** in view of ***Schneider, Jr. (US 3,733,447 A)***.

Regarding claim 1, ***Wenstrand*** discloses an optical mouse system [*e.g., Fig. 5: 100c*] comprising:

a motion sensor [*e.g., Fig. 5: 120*] having a motion signal output [*e.g., interrupt signal*]; and

a detection circuit [*e.g., Fig. 5: 104*] connected to said motion signal output and having a trigger signal output [*e.g., movement information*],

said optical mouse having a sleep state [*e.g., sleep mode*] and a wake state [*e.g., activation / wake-up mode*], wherein

said optical mouse is inactive during said sleep state and

electric current consumption by said optical mouse during said sleep state is less than electric current consumption by said optical mouse during said wake state, wherein

said optical mouse transitions from said sleep state to said wake state when a trigger signal is produced at said trigger signal output

(*see the entire document, including Paragraphs 43-46*).

Wenstrand only mentions in passing using a motion sensor, and does not expressly disclose structural/mounting details of the motion sensor.

However, ***Schneider*** discloses an input device [*Fig. 6*] comprising:

a printed circuit board [*Fig. 1: 10*];

a motion sensor [*Fig. 7*] operatively coupled to said printed circuit board,

said motion sensor having a motion signal output [*Fig. 6: 23, 24*]; and

said motion sensor comprising:

a ball contact [*Fig. 3: 50*]; and

at least one stationary contact [*Fig. 1: 11, 11a, 11b, 11c, 11d, 11e, 11f and 11g*] formed directly on a surface of said printed circuit board, wherein

said ball contact is in electrical contact with said at least one stationary contact (*see Column 3, Line 23 - Column 4, Line 27*).

Wenstrand and ***Schneider*** are analogous art, because they are from the shared field of motion sensing circuitry.

Therefore, it would have been obvious to one having ordinary skill in the art at the time of invention to replace ***Wenstrand's*** motion sensor [*e.g., Fig. 5: 120*] with ***Schneider's*** motion sensor [***Schneider****: Fig. 6*], so as to provide a motion sensor that is nearly uniform motion responsive, simple in structure, rugged in construction, resistant to environmental oxidation, small in size, and readily variable in sensitivity to tilting motions [***Schneider****: Column 1, Lines 48-52*].

Regarding claim 3, ***Wenstrand*** discloses said trigger signal output is a wake-up signal output (*see the entire document, including Paragraphs 43-46*).

Regarding claim 5, ***Schneider*** discloses said motion sensor is a mechanical motion sensor (*see Column 3, Line 23 - Column 4, Line 27*).

Regarding claim 6, ***Schneider*** discloses said motion sensor is a tilt sensor (*see Column 3, Line 23 - Column 4, Line 27*).

Regarding claim 11, ***Schneider*** discloses said at least one stationary contact is printed on said printed circuit board (*see Column 3, Line 23 - Column 4, Line 27*).

Regarding claim 12, ***Schneider*** discloses said at least one stationary contact has a hole [*Fig. 7: 12*] in a center thereof.

Regarding claim 13, ***Schneider*** discloses the at least one stationary contact has an inclined surface toward a center thereof (*Fig. 8*).

Regarding claim 14, ***Schneider*** discloses a sensitivity of said tilt sensor is adjustable during manufacture of said tilt sensor (*see Column 3, Line 23 - Column 4, Line 27*).

Regarding claim 15, ***Schneider*** discloses said at least one stationary contact has a hole [*Fig. 7: 12*] in a center thereof, and

a sensitivity of said tilt sensor is adjusted by a size of the hole (*see Column 3, Line 23 - Column 4, Line 27*).

Regarding claim 16, ***Schneider*** discloses the sensitivity of said tilt sensor is adjustable by a size of the ball contact (*see Column 3, Line 23 - Column 4, Line 27*).

Regarding claim 17, ***Schneider*** discloses the sensitivity of said tilt sensor is adjustable by a weight of the ball contact (*see Column 3, Line 23 - Column 4, Line 27*).

Regarding claim 18, ***Schneider*** discloses the sensitivity of said tilt sensor is adjustable by a conductivity of the ball contact (*see Column 3, Line 23 - Column 4, Line 27*).

Regarding claim 19, ***Schneider*** discloses a plurality of stationary contacts are formed directly on a surface of said printed circuit board (*see Column 3, Line 23 - Column 4, Line 27*).

Regarding claim 20, ***Schneider*** discloses the plurality of stationary contacts are wedge-shaped elements arranged about a central point (*see Fig. 1*).

Regarding claim 21, ***Schneider*** discloses there are at least 2 stationary contacts (*see Fig. 1*).

Regarding claim 25, ***Schneider*** discloses said ball contact is a conductive ball [*Fig. 8: 50*] (*see Column 3, Line 23 - Column 4, Line 27*).

Regarding claim 28, ***Schneider*** discloses said motion sensor further includes a housing [*Fig. 4: 40*] and

said housing is sealed (*see Column 3, Line 23 - Column 4, Line 27*).

Regarding claim 31, ***Wenstrand*** discloses said motion sensor comprises an electrical switch [*e.g., Fig. 4: 104, 110b, 118*] and said detection circuit detects a change in a state of whether said switch is opened or closed (*see the entire document, including Paragraphs 43-46*).

Regarding claim 32, ***Wenstrand*** discloses said detection circuit comprises:

a motion detector [*e.g., Fig. 5: 104*] that determines if there is a change in the opened or closed state of the electrical switch; and

a signal processing circuit [*e.g., Fig. 5: 104*] having a latch circuit [*wherein accelerometer 120 and switches 110b, 118 inherently latch signals to CPU 104*], wherein

said latch circuit creates a signal of a particular level for a period of time to generate a wake-up signal [*mouse activation signal*] (*see the entire document, including Paragraphs 43-46*).

Should it be shown that ***Wenstrand*** teaches such latch circuitry with insufficient specificity; the examiner takes official notice that it was commonly known and understood by

those having ordinary skill in the art at the time of invention to incorporate signal processing circuitry with latch circuitry, so as to hold/store small amounts of data.

8. *Claims 26, 27, and 33* are rejected under 35 U.S.C. 103(a) as being unpatentable over ***Wenstrand et al (US 2004/0155860 A1)*** and ***Schneider, Jr. (US 3,733,447 A)*** as applied respectively to *claims 6 and 32* respectively, and further in view of ***Davis (US 4,196,429 A)***.

Regarding claim 26, neither ***Schneider*** nor ***Wenstrand*** expressly discloses a motion sensor having a gold-plated ball contact.

However, ***Davis*** does disclose a motion sensor having a gold-plated ball contact [*Fig. 2; 46*] (*Column 4, Lines 9-14*).

Schneider, ***Wenstrand***, and ***Davis*** are all analogous art, because they are from the shared field of motion sensing circuitry.

Therefore, it would have been obvious to one having ordinary skill in the art at the time of invention to replace ***Schneider's*** conductor ball [***Schneider****: Fig. 3: 50*] with ***Davis'*** gold plated contacts [***Davis****: Column 3, Lines 64 and Column 4, Line 11*] so as to provide a conductor having excellent electrical conductivity while minimizing oxidation [***Davis****: Column 4, Line 12*].

Regarding claim 27, neither ***Schneider*** nor ***Wenstrand*** expressly discloses a motion sensor having a gold-plated stationary contact.

However, ***Davis*** does disclose a motion sensor having gold-plated stationary contacts [*Fig. 2; 32 & 36*] (*Column 3, Lines 63-68*).

Regarding claim 33, neither ***Schneider*** nor ***Wenstrand*** expressly discloses a motion detector comprising two invertors for amplifying and converting the motion signal output from the motion sensor.

However, ***Davis*** does disclose a motion detector comprising two inverters [*Fig. 10; 98 & 108*] for amplifying and converting a motion signal output [*Fig. 10; at 7*] from a motion sensor [*Fig. 10; 70*] (*Column 5, Lines 18-64*).

Therefore, it would have been obvious to use ***Davis'*** hex inverter buffer amplifier circuit as ***Wenstrand'*** motion detector, so as to provide an inexpensive and small-sized motion detector [***Davis****: Column 5, Lines 45-47*].

9. *Claim 30* is rejected under 35 U.S.C. 103(a) as being unpatentable over ***Wenstrand et al (US 2004/0155860 A1)*** and ***Schneider, Jr. (US 3,733,447 A)*** as applied to *claim 28* above, and further in view of ***Kato et al (US 5,837,951 A)***.

Regarding claim 30, neither ***Schneider*** nor ***Wenstrand*** expressly discloses a motion sensor housing being sealed with an adhesive.

However, ***Kato*** does disclose a motion sensor housing being sealed with an adhesive (*Fig. 35; Column 30, Lines 37-40*).

Schneider, ***Wenstrand***, and ***Kato*** are all analogous art, because they are from the shared field of motion sensing circuitry.

Therefore, it would have been obvious to one having ordinary skill in the art at the time of invention to replace ***Schneider's*** seals [***Schneider***: *Column 3, Lines 58-66*] with ***Kato's*** seals [***Kato***: *Column 30, Lines 37-40 and Column 33, Lines 47-52*] so as to securely seal the resulting motion sensor without need for welding work [***Kato***: *Column 30, Lines 24-26*].

10. *Claim 38* is rejected under 35 U.S.C. 103(a) as being unpatentable over ***Wenstrand et al (US 2004/0155860 A1)*** and ***Schneider, Jr. (US 3,733,447 A)*** as applied to *claim 1* above, and further in view of ***Popper et al (US 5,790,873 A)***.

Regarding claim 38, neither ***Schneider*** nor ***Wenstrand*** expressly discloses electric current consumption of said optical mouse during said sleep state is about 5-8 microamps.

However, ***Popper*** does disclose electric current consumption of a mouse during a sleep state is about 5-8 microamps (*see the entire document, including Column 1, Lines 15-38*).

Schneider, ***Wenstrand***, and ***Popper*** are all analogous art, because they are from the shared field of motion sensing circuitry.

Wenstrand and ***Popper*** are all analogous art, because they are from the shared field of mice having sleep states.

Therefore, it would have been obvious to one having ordinary skill in the art at the time of invention to operate ***Schneider's*** and ***Wenstrand's*** combined mouse system's sleep mode in ***Popper's*** near zero current state, so as to minimize power consumption.

11. *Claims 1, 3, 5, 6, 12-21, 25, 28, 31, and 32* are rejected under 35 U.S.C. 103(a) as being unpatentable over in view of ***Wenstrand et al (US 2004/0155860 A1)*** in view of ***Chou (US 6,559,396 B1)***.

Regarding claim 1, ***Wenstrand*** discloses an optical mouse system [*e.g., Fig. 5: 100c*] comprising:

a motion sensor [*e.g., Fig. 5: 120*] having a motion signal output [*e.g., interrupt signal*]; and

a detection circuit [*e.g., Fig. 5: 104*] connected to said motion signal output and having a trigger signal output [*e.g., movement information*],

said optical mouse having a sleep state [*e.g., sleep mode*] and a wake state [*e.g., activation / wake-up mode*], wherein

said optical mouse is inactive during said sleep state and

electric current consumption by said optical mouse during said sleep state is less than electric current consumption by said optical mouse during said wake state, wherein

said optical mouse transitions from said sleep state to said wake state when a trigger signal is produced at said trigger signal output

(*see the entire document, including Paragraphs 43-46*).

Wenstrand only mentions in passing using a motion sensor, and does not expressly disclose structural/mounting details of the motion sensor.

However, ***Chou*** discloses an input device [*Fig. 7*] comprising:

a printed circuit board [*Fig. 7; 60*];

a motion sensor [*Fig. 7; 30 & 40 working in electrical/gravitational conjunction together*] operatively coupled to said printed circuit board (*Column 2, Line 66 - Column 3, Line 22*),

said motion sensor having a motion signal output [*either electrically switched-on or switched-off, depending upon conductive ball 30 position*]; and

said motion sensor comprising:

a ball contact [*Fig. 7; 30*]; and

at least one stationary contact [*Fig. 7; 40, 41, 42, 62*] formed directly on a surface of said printed circuit board (*wherein conductive copper foil 62 is formed directly on insulative circuit board 60*), wherein

said ball contact is in electrical contact with said at least one stationary contact (*Column 2, Lines 1-33*).

Wenstrand and ***Chou*** are analogous art, because they are from the shared field of motion sensor circuitry.

Therefore, it would have been obvious to one having ordinary skill in the art at the time of invention to replace ***Wenstrand's*** motion sensor [*e.g., Fig. 5: 120*] with ***Chou's*** motion sensor [***Chou****: Fig. 7; 100*], so as to provide a motion sensor which can maintain an electrical connection even when jerked by a slight tilting force, and thereby prevent undesired electrical connection interruptions [***Chou****: Column 1, Lines 32-42*].

Regarding claim 3, ***Wenstrand*** discloses said trigger signal output is a wake-up signal output (*see the entire document, including Paragraphs 43-46*).

Regarding claim 5, ***Chou*** discloses said motion sensor is a mechanical motion sensor (*Column 1, Lines 6-11*).

Regarding claim 6, ***Chou*** discloses said motion sensor is a tilt sensor (*Column 1, Lines 6-11*).

Regarding claim 12, ***Chou*** discloses said at least one stationary contact has a hole [*Fig. 7; 43*] in a center thereof (*Column 3, Lines 39-60*).

Regarding claim 13, ***Chou*** discloses the at least one stationary contact has an inclined surface [*Fig. 7; 421*] toward a center thereof (*Column 3, Lines 61-67*).

Regarding claim 14, ***Chou*** discloses a sensitivity of said tilt sensor is adjustable during manufacture of said tilt sensor (*Column 2, Lines 17-33 -- wherein **Chou's** motion sensor is adjusted during manufacture to be less sensitive than a conventional motion sensor*).

Regarding claim 15, ***Chou*** discloses said at least one stationary contact has a hole [*Fig. 7; 43*] in a center thereof, and

a sensitivity of said tilt sensor is adjusted by a size of the hole (*Column 2, Lines 1-33 -- wherein hole size inherently impacts motion sensor sensitivity*).

Regarding claim 16, ***Chou*** discloses the sensitivity of said tilt sensor is adjustable by a size of the ball contact (*Column 2, Lines 1-33 -- wherein ball size inherently impacts motion sensor sensitivity*).

Regarding claim 17, ***Chou*** discloses the sensitivity of said tilt sensor is adjustable by a weight of the ball contact (*Column 2, Lines 1-33 -- wherein ball weight inherently impacts motion sensor sensitivity*).

Regarding claim 18, ***Chou*** discloses the sensitivity of said tilt sensor is adjustable by a conductivity of the ball contact (*Column 2, Lines 1-33 -- wherein ball conductivity inherently impacts motion sensor sensitivity*).

Regarding claim 19, ***Chou*** discloses a plurality of stationary contacts are formed directly on a surface of said printed circuit board of said device [*Fig. 7; 40*] (*Column 3, Lines 1-3*).

Regarding claim 20, ***Chou*** discloses the plurality of stationary contacts are wedge-shaped elements arranged about a central point (*Fig. 6*).

Regarding claim 21, ***Chou*** discloses there are at least 2 [*first and second*] stationary contacts [*Fig. 7; 40*] (*Column 3, Lines 1-3*).

Regarding claim 25, ***Chou*** discloses said ball contact is a conductive ball (*Column 1, Lines 6-11*).

Regarding claim 28, ***Chou*** discloses said motion sensor further includes a housing [*Fig. 7; 20*] and

said housing is sealed (*Column 4, Lines 12-15*).

Regarding claim 31, ***Wenstrand*** discloses said motion sensor comprises an electrical switch [*e.g., Fig. 4: 104, 110b, 118*] and said detection circuit detects a change in a state of whether said switch is opened or closed (*see the entire document, including Paragraphs 43-46*).

Regarding claim 32, ***Wenstrand*** discloses said detection circuit comprises:

a motion detector [*e.g., Fig. 5: 104*] that determines if there is a change in the opened or closed state of the electrical switch; and

a signal processing circuit [*e.g., Fig. 5: 104*] having a latch circuit [*wherein accelerometer 120 and switches 110b, 118 inherently latch signals to CPU 104*], wherein

said latch circuit creates a signal of a particular level for a period of time to generate a wake-up signal [*mouse activation signal*] (*see the entire document, including Paragraphs 43-46*).

Should it be shown that ***Wenstrand*** teaches such latch circuitry with insufficient specificity; the examiner takes official notice that it was commonly known and understood by those having ordinary skill in the art at the time of invention to incorporate signal processing circuitry with latch circuitry, so as to hold/store small amounts of data.

12. *Claim 11* is rejected under 35 U.S.C. 103(a) as being unpatentable over ***Wenstrand et al (US 2004/0155860 A1)*** and ***Chou (US 6,559,396 B1)*** as applied respectively to *claim 1* above, and further in view of ***Schneider, Jr. (US 3,733,447 A)***.

Regarding claim 11, ***Chou*** arguably does not disclose said at least one stationary contact is printed on said printed circuit board.

However, ***Schneider*** discloses said at least one stationary contact is printed on said printed circuit board (*see Column 3, Line 23 - Column 4, Line 27*).

Chou and ***Schneider*** are all analogous art, because they are from the shared field of tilt/motion sensing circuitry.

Therefore, it would have been obvious to one having ordinary skill in the art at the time of invention to use ***Schneider's*** printing technique to form ***Chou's*** stationary contacts, so as make inexpensive and readily prepared stationary contacts [***Schneider****: Column 1, Line 55 - Column 2, Line 42*].

13. *Claims 26, 27, and 33* are rejected under 35 U.S.C. 103(a) as being unpatentable over ***Wenstrand et al (US 2004/0155860 A1)*** and ***Chou (US 6,559,396 B1)*** as applied respectively to *claims 6 and 32* respectively, and further in view of ***Davis (US 4,196,429 A)***.

Regarding claim 26, neither ***Chou*** nor ***Wenstrand*** expressly discloses a motion sensor having a gold-plated ball contact.

However, ***Davis*** does disclose a motion sensor having a gold-plated ball contact [*Fig. 2; 46*] (*Column 4, Lines 9-14*).

Chou, ***Wenstrand***, and ***Davis*** are all analogous art, because they are from the shared field of motion sensing circuitry.

Therefore, it would have been obvious to one having ordinary skill in the art at the time of invention to replace ***Chou's*** copper/steel conductor ball [***Chou****: Column 3, Lines 23-25*] with ***Davis'*** gold plated contacts [***Davis****: Column 3, Lines 64 and Column 4, Line 11*] so as to provide a conductor having excellent electrical conductivity while minimizing oxidation [***Davis****: Column 4, Line 12*].

Regarding claim 27, neither ***Chou*** nor ***Wenstrand*** expressly discloses a motion sensor having a gold-plated stationary contact.

However, ***Davis*** does disclose a motion sensor having gold-plated stationary contacts [*Fig. 2; 32 & 36*] (*Column 3, Lines 63-68*).

Regarding claim 33, neither ***Chou*** nor ***Wenstrand*** expressly discloses a motion detector comprising two invertors for amplifying and converting the motion signal output from the motion sensor.

However, ***Davis*** does disclose a motion detector comprising two inverters [*Fig. 10; 98 & 108*] for amplifying and converting a motion signal output [*Fig. 10; at 7*] from a motion sensor [*Fig. 10; 70*] (*Column 5, Lines 18-64*).

Therefore, it would have been obvious to use ***Davis'*** hex inverter buffer amplifier circuit as ***Wenstrand's*** motion detector, so as to provide an inexpensive and small-sized motion detector [***Davis****: Column 5, Lines 45-47*].

14. *Claim 30* is rejected under 35 U.S.C. 103(a) as being unpatentable over ***Wenstrand et al (US 2004/0155860 A1)*** and ***Chou (US 6,559,396 B1)*** as applied to *claim 28* above, and further in view of ***Kato et al (US 5,837,951 A)***.

Regarding claim 30, neither ***Chou*** nor ***Wenstrand*** expressly discloses a tilt switch housing being sealed with an adhesive.

However, ***Kato*** does disclose a tilt switch housing being sealed with an adhesive (*Fig. 35; Column 30, Lines 37-40*).

Chou, ***Wenstrand***, and ***Kato*** are all analogous art, because they are from the shared field of motion sensing circuitry.

Therefore, it would have been obvious to one having ordinary skill in the art at the time of invention to replace ***Chou's*** seals [***Chou****: Column 4, Lines 12-15*] with ***Kato's*** seals [***Kato****:*

Column 30, Lines 37-40 and Column 33, Lines 47-52] so as to securely seal the resulting tilt switch without need for welding work [***Kato**: Column 30, Lines 24-26*].

15. *Claim 38* is rejected under 35 U.S.C. 103(a) as being unpatentable over ***Wenstrand et al (US 2004/0155860 A1)*** and ***Chou (US 6,559,396 B1)*** as applied to *claim 1* above, and further in view of ***Popper et al (US 5,790,873 A)***.

Regarding claim 38, neither ***Chou*** nor ***Wenstrand*** expressly discloses electric current consumption of said optical mouse during said sleep state is about 5-8 microamps.

However, ***Popper*** does disclose electric current consumption of a mouse during a sleep state is about 5-8 microamps (*see the entire document, including Column 1, Lines 15-38*).

Chou, ***Wenstrand***, and ***Popper*** are all analogous art, because they are from the shared field of motion sensing circuitry.

Wenstrand and ***Popper*** are all analogous art, because they are from the shared field of mice having sleep states.

Therefore, it would have been obvious to one having ordinary skill in the art at the time of invention to operate ***Chou's*** and ***Wenstrand's*** combined mouse system's sleep mode in ***Popper's*** near zero current state, so as to minimize power consumption.

Response to Arguments

16. Applicant's arguments filed on *5 August 2009* have been fully considered but they are not persuasive.

Applicant's arguments with respect to *claims 1, 3, 5, 6, 11-21, 25-28, 30-33, and 38* have been considered but are moot in view of the new ground(s) of rejection.

By such reasoning, rejection of the claims is deemed necessary, proper, and thereby maintained at this time.

Conclusion

17. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The documents listed on the attached '*Notice of References Cited*' are cited to further evidence the state of the art pertaining to optical mouse systems.

18. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event,

however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jeff Piziali whose telephone number is (571) 272-7678. The examiner can normally be reached on Monday - Friday (6:30AM - 3PM).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Chanh Nguyen can be reached on (571) 272-7772. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Jeff Piziali/
Primary Examiner, Art Unit 2629
8 February 2010